



Sequence Listing

(1) GENERAL INFORMATION:

(i) APPLICANT: KAWASAKI, Hideki  
TOKAI, Masaya  
KIKUCHI, Yasuhiro  
OUCHI, Kozo

(ii) TITLE OF INVENTION: DNA ENCODING PROTEIN COMPLEMENTING  
YEAST  
LOW TEMPERATURE-SENSITIVE FERMENTABILITY

(iii) NUMBER OF SEQUENCES: 2

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: FITZPATRICK, CELLA, HARPER & SCINTO  
(B) STREET: 30 Rockefeller Plaza  
(C) CITY: New York  
(D) STATE: New York  
(E) COUNTRY: U.S.A.  
(F) ZIP: 10112-3801

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Diskette - 3.50 inch, 1440 kb storage.  
  
(B) COMPUTER: IBM PS/V  
(C) OPERATING SYSTEM: MS-DOS Ver3.30  
(D) SOFTWARE: PATENT AID Ver1.0

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: US/09/678,023  
(B) FILING DATE: 04-OCTOBER-2000

(vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: 08/894,344  
(B) FILING DATE: 15-AUGUST-1997  
(A) APPLICATION NUMBER: JP343700/95  
(B) FILING DATE: 28-DECEMBER-1995  
(A) APPLICATION NUMBER: PCT/JP96/03862  
(B) FILING DATE: 27-DECEMBER-1996

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Perry, Lawrence S.  
(B) REGISTRATION NUMBER: 31865

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: 212-218-2100  
(B) TELEFAX: 212-218-2200

(2) INFORMATION FOR SEQ ID NO: 1 :

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8874 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: double  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: Genomic DNA

(vi) ORIGINAL SOURCE:

(A) ORGANISM: *Saccharomyces cerevisiae*

(B)STRAIN: X2180-1B

(ix)FEATURE:

(A)NAME/KEY: CDS  
(B)LOCATION: 1 to 8874  
(C)IDENTIFICATION METHOD: E

(ix)FEATURE:

(A)NAME/KEY: cleavage-site  
(B)LOCATION: 1291 to 1296  
(C)IDENTIFICATION METHOD: S

(ix)FEATURE:

(A)NAME/KEY: cleavage-site  
(B)LOCATION: 4388 to 4393  
(C)IDENTIFICATION METHOD: S

(ix)FEATURE:

(A)NAME/KEY: cleavage-site  
(B)LOCATION: 5027 to 5032  
(C)IDENTIFICATION METHOD: S

(ix)FEATURE:

(A)NAME/KEY: cleavage-site  
(B)LOCATION: 7675 to 7680  
(C)IDENTIFICATION METHOD: S

(xi)SEQUENCE DESCRIPTION: SEQ ID NO: 1

ATG GAA GCT ATT TCA CAA TTA CGT GGT GTT CCA TTG ACA CAC CAA AAG	48
GAC TTT AGC TGG GTC TTT TTA GTA GAT TGG ATT CTC ACG GTA GTA GTA	96
TGT TTG ACA ATG ATA TTC TAC ATG GGA AGA ATC TAT GCA TAC CTT GTA	144
AGT TTT ATA TTA GAA TGG CTA CTA TGG AAA CGA GCG AAA ATC AAG ATA	192
AAT GTT GAG ACA CTT CGT GTC TCC TTA CTA GGT GGT CGA ATA CAT TTT	240
AAA AAC CTT TCC GTA ATA CAC AAA GAT TAT ACA ATT TCG GTA TTA GAG	288
GGT AGT TTA ACA TGG AAA TAC TGG CTT TTA AAT TGC AGA AAA GCA GAA	336
TTG ATA GAG AAT AAC AAG TCT TCT TCT GCC AAA AAA GCA AAG CTT CCC	384
TGT AAA ATT TCC GTA GAA TGT GAA GGT CTA GAA ATT TTT ATT TAC AAC	432
AGA ACA GTG GCG TAC GAT AAT GTT ATA AAC TTA CTA TCA AAA GAT GAA	480
CGC GAT AAA TTT GAA AAA TAC CTT AAT GAG CAT TCT TTT CCT GAA CCT	528
TTT AGC GAT GGA AGT AGT GCT GAT AAA TTA GAT GAA GAT CTA AGC GAA	576
TCT GCA TAC ACA ACG AAC TCT GAT GCA TCA ATT GTT AAT GAC AGG GAC	624
TAC CAA GAA ACA GAT ATC GGC AAA CAT CCA AAG CTA CTG ATG TTT TTA	672
CCA ATT GAG CTT AAA TTT AGC CGC GGT TCC CTA CTG TTA GGA AAC AAA	720
TTC ACG CCA TCT GTT ATG ATT CTA AGT TAT GAA AGT GGA AAA GGC ATA	768
ATA GAT GTT TTA CCT CCA AAA GAG CGA TTA GAT TTA TAC AGA AAT AAA	816
ACA CAG ATG GAA TTC AAA AAC TTC GAA ATT TCT ATC AAA CAA AAT ATT	864

GGT TAC GAT GAT GCT ATT GGA TTG AAG TTT AAA ATA GAT AGA GGG AAA 912  
GTG TCA AAG TTA TGG AAA ACG TTT GTA CGA GTC TTT CAG ATA GTA ACC 960  
AAG CCT GTT GTA CCG AAA AAG ACT AAA AAA AGC GCA GGC ACA TCA GAT 1008  
GAC AAT TTC TAT CAT AAA TGG AAA GGT TTA TCT CTT TAT AAG GCT TCT 1056  
GCG GGC GAC GCT AAA GCA AGT GAT TTA GAT GAT GTT GAG TTC GAT TTG 1104  
ACG AAC CAT GAA TAT GCT AAA TTT ACA TCA ATT TTA AAA TGC CCA AAG 1152  
GTC ACA ATT GCA TAT GAC GTG GAT GTT CCG GGC GTG CCA CAT GGT 1200  
GCA CAT CCG ACA ATA CCT GAT ATT GAT GGA CCA GAT GTG GGC AAT AAC 1248  
GGA GCA CCT CCA GAT TTT GCT TTA GAT GTT CAA ATT CAC GGA GGA TCC 1296  
ATC TGT TAC GGA CCT TGG GCT CAA AGA CAA GTC AGT CAT CTA CAA AGA 1344  
GTT CTA TCA CCG GTA GTT TCA AGG ACA GCC AAA CCT ATA AAA AAA CTC 1392  
CCG CCA GGT TCT AGA AGA ATA TAT ACA CTT TTC AGG ATG AAT ATA TCA 1440  
ATA ATG GAA GAT ACT ACT TGG CGT ATA CCG ACG AGG GAA AGT AGC AAA 1488  
GAC CCC GAA TTT TTG AAA CAC TAC AAA GAA ACT AAT GAA GAA TAT AGG 1536  
CCA TTT GGA TGG ATG GAT CTC CGA TTT TGT AAG GAC ACC TAT GCA AAT 1584  
TTC AAT ATA AGT GTT TGT CCT ACA GTG CAA GGT TTT CAG AAT AAT TTC 1632  
CAT GTT CAT TTC CTG GAA ACC GAA ATT AGG TCA AGT GTT AAT CAC GAT 1680  
ATT TTG TTA AAA AGC AAG GTA TTC GAT ATT GAT GGG GAT ATT GGA TAT 1728  
CCA TTG GGT TGG AAT AGC AAA GCT ATA TGG ATA ATT AAC ATG AAG TCA 1776  
GAA CAA TTA GAG GCG TTT CTG CTA CGT GAG CAT ATA ACT TTA GTT GCA 1824  
GAT ACG CTT TCA GAC TTT TCC GCT GGT GAT CCT ACG CCT TAC GAA CTT 1872  
TTT AGA CCA TTC GTA TAC AAA GTC AAT TGG GAA ATG GAA GGA TAT TCC 1920  
ATT TAC TTA AAC GTC AAT GAT CAC AAT ATT GTT AAC AAT CCG TTA GAT 1968  
TTT AAC GAA AAC TGT TAT TTA TCC CTT CAT GGT GAT AAG CTT TCA ATT 2016  
GAT GTC ACG GTA CCC CGT GAG AGT ATT TTG GGG ACA TAC ACA GAT ATG 2064  
TCC TAC GAG ATC TCA ACT CCA ATG TTC AGA ATG ATG TTA AAT ACC CCC 2112  
CCT TGG AAT ACA TTG AAC GAA TTC ATG AAA CAT AAA GAA GTG GGG AGA 2160  
GCA TAC GAC TTT ACA ATT AAA GGT TCT TAC CTT CTC TAT TCC GAG TTA 2208  
GAT ATT GAT AAT GTC GAT ACG CTA GTC ATA GAG TGT AAC AGC AAG AGT 2256  
ACA GTA CTT CAC TGC TAT GGG TTT GTC ATG AGG TAT TTA ACA AAC GTA 2304  
AAG ATG AAT TAC TTC GGT GAA TTT TTT AAT TTT GTG ACG TCA GAA GAG 2352  
TAC ACA GGT GTC CTT GGC GCT AGG GAA GTC GGA GAT GTC ACT ACG AAA 2400

AGC TCG GTG GCA GAT TTG GCA TCT ACT GTA GAT TCA GGG TAC CAA AAT 2448  
AGC AGT CTA AAG AAC GAA TCT GAG GAT AAA GGT CCT ATG AAA AGG TCA 2496  
GAT TTG AAA AGG ACT ACC AAC GAA ACT GAT ATT TGG TTC ACA TTT TCG 2544  
GTT TGG GAT GGT GCT CTG ATA TTA CCA GAA ACG ATT TAC AGT TTT GAT 2592  
CCA TGC ATT GCA CTA CAT TTT GCC GAA CTT GTA GTG GAT TTC AGA AGT 2640  
TGT AAT TAT TAT ATG GAC ATA ATG GCG GTT CTC AAC GGG ACT TCA ATA 2688  
AAG CGG CAC GTT TCA AAA CAA ATA AAT GAA GTA TTT GAT TTT ATA CGT 2736  
CGT AAT AAC GGA GCT GAT GAG CAA GAG CAC GGA TTG CTT TCG GAC CTC 2784  
ACC ATT CAT GGA CAT AGA ATG TAT GGA TTA CCA CCC ACA GAA CCT ACC 2832  
TAC TTT TGT CAA TGG GAT ATC AAT CTC GGA GAT TTA TGC ATT GAT TCA 2880  
GAT ATT GAA TTT ATA AAG GGA TTC TTT AAT TCC TTT TAT AAG ATA GGT 2928  
TTT GGC TAC AAT GAC TTG GAA AAT ATA TTA TTA TAT GAC ACT GAG ACC 2976  
ATT AAT GAT ATG ACC TCG CTA ACC GTG CAC GTT GAA AAA ATA AGA ATA 3024  
GGC CTT AAA GAT CCG GTG ATG AAA TCT CAA TCA GTT ATT AGT GCT GAA 3072  
TCG ATA TTG TTT ACT TTG ATC GAC TTT GAA AAC GAA AAA TAT TCA CAA 3120  
AGA ATA GAC GTG AAA ATT CCA AAA TTG ACA ATT TCG TTA AAT TGC GTG 3168  
ATG GGC GAT GGC GTA GAC ACA TCA TTT CTC AAA TTC GAA ACA AAA TTA 3216  
AGA TTT ACA AAC TTT GAG CAA TAC AAG GAT ATC GAT AAA AAA AGA TCA 3264  
GAA CAA CGC AGA TAT ATA ACA ATA CAC GAT TCA CCC TAT CAT AGG TGT 3312  
CCT TTT CTT CTT CCG CTG TTC TAT CAG GAT TCG GAT ACA TAC CAA AAC 3360  
CTG TAC GGG GCT ATA GCA CCA TCT TCG TCT ATC CCA ACT TTA CCT CTT 3408  
CCC ACT TTG CCT GAT ACT ATA GAT TAT ATC ATT GAA GAT ATT GTG GGC 3456  
GAG TAT GCT ACC CTT CTG GAG ACC ACA AAT CCA TTC AAG AAC ATA TTC 3504  
GCA GAA ACT CCA TCA ACT ATG GAG CCT TCA AGA GCC AGC TTC AGT GAA 3552  
GAT GAT AAT GAC GAA GAA GCG GAC CCT TCA AGC TTC AAA CCT GTC GCT 3600  
TTT ACA GAA GAC AGA AAC CAC GAA AGG GAT AAC TAT GTT GTT GAT GTT 3648  
TCA TAT ATT CTG TTG GAT GTC GAC CCG TTG CTT TTT ATT TTC GCT AAG 3696  
AGT TTA TTA GAA CAG CTT TAC TCT GAA AAC ATG GTA CAA GTC TTA GAC 3744  
GAT ATT GAA ATT GGG ATT GTG AAA CGA TTA AGC AAC CTT CAA GAA GGG 3792  
ATC ACT TCT ATT TCA AAC ATT GAT ATC CAT ATT GCT TAT CTA AAT TTA 3840  
ATC TGG CAA GAG ACA GGT GAG GAA GGT TTT GAG CTC TAT TTA GAT CGT 3888  
ATT GAT TAT CAA ATG AGT GAA AAG TCT CTA GAG AAG AAC CGA ACA AAT 3936

AAA TTA TTA GAA GTA GCA GCT TTA GCA AAG GTA AAA ACT GTC AGA GTG 3984  
ACT GTT AAC CAG AAG AAA AAT CCA GAC TTG TCT GAA GAT CGT CCC CCT 4032  
GCA CTG TCG CTA GGG ATT GAG GGT TTC GAA GTA TGG TCT TCT ACA GAA 4080  
GAT AGA CAA GTT AAC TCA TTA AAC TTA ACG TCA TCA GAT ATT ACC ATA 4128  
GAC GAA TCT CAA ATG GAA TGG CTG TTT GAG TAC TGT AGT GAC CAG GGA 4176  
AAT CTT ATT CAA GAG GTT TGC ACT TCT TTT AAT TCT ATT CAG AAC ACC 4224  
AGA AGT AAT TCA AAG ACA GAA CTC ATT TCA AAG CTC ACA GCC GCA AGC 4272  
GAA TAT TAT CAA ATT AGT CAT GAT CCT TAC GTC ATA ACA AAA CCT GCT 4320  
TTT ATT ATG AGA CTT TCC AAA GGG CAT GTG CGT GAG AAT CGT AGT TGG 4368  
AAA ATT ATT ACG CGT CTG AGA CAC ATT TTA ACG TAC CTT CCT GAT GAT 4416  
TGG CAA AGC AAC ATC GAC GAA GTG CTA AAA GAA AAG AAA TAT ACC TCT 4464  
GCT AAA GAT GCA AAA AAT ATC TTC ATG TCT GTG TTT TCG ACT TGG AGA 4512  
AAT TGG GAG TTC TCA GAT GTT GCA AGG TCG TAT ATA TAC GGC AAA TTA 4560  
TTC ACG GCA GAA AAT GAG AAA CAT AAA CAA AAT TTG ATT AAA AAA TTG 4608  
TTG AAG TGT ACC ATG GGA TCA TTT TAC CTT ACT GTT TAT GGT GAG GGA 4656  
TAT GAG GTT GAG CAT AAT TTT GTT GTT GCG GAT GCC AAT CTG GTA GTG 4704  
GAT TTG ACG CCT CCG GTG ACA AGC TTA CCT TCA AAT CGA GAA GAA ACT 4752  
ATT GAA ATT ACG GGA AGA GTA GGC TCA GTA AAA GGA AAA TTC AGT GAT 4800  
AGG TTA CTT AAA TTG CAA GAT CTT ATT CCA CTC ATT GCA GCA GTG GGC 4848  
GAA GAT GAC AAA AGT GAT CCA AAA AAG GAG TTA TCA AAG CAA TTC AAA 4896  
ATG AAC ACC GTT TTA TTA GTG GAT AAA AGT GAA CTG CAA CTG GTC ATG 4944  
GAC CAA ACG AAG CTG ATG AGT AGA ACA GTC GGG GGT AGA GTT AGT TTA 4992  
CTA TGG GAA AAT CTA AAA GAT TCA ACT AGT CAA GCG GGT TCA TTG GTT 5040  
ATA TTT TCC CAG AAA TCG GAA GTG TGG TTA AAA CAC ACA TCT GTC ATT 5088  
TTG GGA GAA GCT CAA CTG CGC GAC TTT TCA GTT TTA GCG ACT ACT GAG 5136  
GCA TGG TCA CAC AAG CCT ACG ATT CTG ATA AAC AAC CAG TGC GCA GAT 5184  
CTT CAT TTT AGA GCA ATG AGT TCA ACT GAG CAA TTA GTA ACC GCT ATT 5232  
ACT GAA ATT AGG GAA AGT CTG ATG ATG ATT AAA GAG CGC ATA AAG TTT 5280  
AAA CCT AAA TCA AAG AAA AAG TCC CAA TTT GTC GAC CAG AAA ATT AAT 5328  
ACA GTC TTG TCA TGT TAT TTT TCA AAC GTT AGT TCT GAA GTT ATG CCG 5376  
CTC TCG CCA TTT TAT ATT CGT CAC GAA GCC AAG CAG CTT GAT ATA TAT 5424  
TTT AAC AAA TTC GGT TCA AAT GAG ATT TTG TTA AGC ATA TGG GAT ACT 5472

GAT TTT TTC ATG ACA TCG CAC CAG ACA AAG GAG CAA TAC CTA AGG TTT 5520  
TCA TTT GGC GAT ATT GAA ATT AAA GGA GGA ATT TCT AGA GAA GGC TAT 5568  
TCG TTG ATA AAC GTT GAC ATC TCA ATA TCT ATG ATT AAG TTA ACC TTT 5616  
TCG GAG CCG CGC CGT ATT GTA AAC AGT TTT TTA CAA GAT GAA AAG CTT 5664  
GCT TCT CAG GGT ATC AAT CTG TTA TAT TCC CTG AAG CCT TTA TTC TTT 5712  
AGT TCA AAT CTA CCA AAA AAA GAG AAG CAG GCA CCC TCG ATA ATG ATA 5760  
AAT TGG ACA TTA GAT ACT AGC ATT ACT TAT TTT GGT GTT CTT GTG CCA 5808  
GTG GCT TCC ACG TAT TTC GTG TTT GAA TTA CAT ATG CTG CTA CTT TCT 5856  
CTG ACC AAT ACG AAT AAC GGT ATG TTA CCA GAA GAA ACC AAG GTG ACG 5904  
GGA CAG TTT TCC ATC GAA AAC ATC CTA TTT CTA ATA AAG GAG CGG TCA 5952  
CTA CCC ATT GGT CTT TCC AAA TTA CTC GAC TTT TCC ATA AAA GTA TCA 6000  
ACC CTA CAA AGA ACG GTT GAT ACG GAG CAG TCA TTC CAA GTG GAA AGT 6048  
TCT CAT TTC AGG GTC TGC TTA TCT CCT GAT TCT CTA TTA AGA TTA ATG 6096  
TGG GGC GCG CAT AAA TTG CTA GAC TTG AGC CAT TAC TAT TCA AGA CGC 6144  
CAT GCC CCT AAT ATT TGG AAC ACT AAG ATG TTC ACC GGT AAA AGT GAT 6192  
AAG TCA AAA GAA ATG CCC ATA AAT TTC CGT TCA ATA CAC ATC CTG TCC 6240  
TAT AAA TTT TGT ATT GGG TGG ATA TTC CAG TAT GGA GCA GGC TCC AAT 6288  
CCT GGG TTA ATG TTA GGT TAT AAC AGA TTG TTT TCA GCA TAT GAA AAG 6336  
GAT TTT GGG AAA TTC ACA GTT GTG GAC GCT TTT TTC TCT GTT GCG AAT 6384  
GGT AAT ACC TCA AGC ACT TTT TTC TCT GAA GGA AAC GAG AAA GAC AAA 6432  
TAT AAT AGA AGT TTC TTG CCA AAC ATG CAA ATA TCC TAC TGG TTC AAA 6480  
AGA TGT GGT GAG TTG AAA GAT TGG TTT TTT AGA TTT CAT GGT GAA GCA 6528  
CTG GAT GTA AAC TTT GTC CCG TCA TTC ATG GAT GTC ATT GAG TCT ACT 6576  
TTA CAA TCC ATG CGA GCA TTT CAA GAG CTG AAA AAG AAC ATT CTG GAT 6624  
GTG TCC GAG AGT TTG CGT GCG GAA AAT GAT AAT TCT TAT GCT AGT ACC 6672  
AGT GTC GAA AGT GCT TCG AGT AGT TTG GCT CCC TTT CTC GAT AAC ATT 6720  
AGA TCT GTT AAC TCA AAT TTC AAG TAT GAC GGT GGT GTA TTT AGG GTT 6768  
TAC ACG TAC GAA GAT ATT GAA ACC AAG AGT GAG CCA TCT TTT GAA ATA 6816  
AAA AGT CCA GTA GTC ACT ATA AAC TGT ACA TAT AAA CAT GAT GAA GAT 6864  
AAA GTT AAG CCA CAT AAA TTC AGA ACA TTA ATC ACT GTC GAC CCA ACG 6912  
CAT AAT ACT TTG TAT GCG GGA TGT GCT CCT TTA TTA ATG GAA TTT TCT 6960  
GAA AGT CTG CAA AAG ATG ATA AAG AAA CAT AGC ACC GAC GAA AAA CCA 7008

AAC TTT ACA AAA CCT TCT TCA CAG AAT GTT GAT TAT AAG CGA CTT TTG 7056  
GAT CAA TTT GAT GTG GCT GTA AAA CTA ACA TCA GCC AAG CAA CAG CTA 7104  
AGT TTG AGC TGT GAA CCA AAA GCT AAG GTT CAG GCA GAT GTT GGA TTT 7152  
GAA TCG TTT TTG TTC AGT ATG GCT ACC AAT GAG TTC GAC TCT GAA CAG 7200  
CCT TTG GAG TTT TCT TTA ACT CTA GAA CAC ACA AAA GCG TCC ATT AAG 7248  
CAC ATA TTT TCA AGA GAA GTA AGT ACG TCC TTT GAA GTT GGT TTC ATG 7296  
GAC TTG ACG CTT TTA TTT ACA CAT CCT GAT GTA ATC AGT ATG TAT GGA 7344  
ACG GGG TTG GTT TCT GAT CTA AGC GTC TTC AAT GTA AAG CAG CTC 7392  
CAG AAC CTG TAT TTA TTC TTG GAC ATA TGG AGG TTC AGT AGC ATT TTA 7440  
CAC ACA CGG CCA GTG CAA AGA ACT GTT AAT AAG GAA ATT GAA ATG AGT 7488  
TCA TTA ACA TCA ACC AAC TAT GCC GAT GCA GGT ACG GAA ATA CCC TGG 7536  
TGC TTT ACA TTA ATT TTT ACA AAT GTT AGC GGA GAC GTT GAT TTG GGT 7584  
CCT TCT CTC GGT ATG ATT TCA TTA AGG ACA CAA AGA ACA TGG CTG GCC 7632  
ACA GAT CAT TAT AAC GAG AAG CGG CAG TTA CTG CAT GCT TTC ACT GAC 7680  
GGT ATT AGC TTG ACA TCA GAA GGT AGA CTG AGT GGT TTA TTT GAA GTT 7728  
GCG AAT GCA AGT TGG TTA TCA GAA GTA AAA TGG CCA CCT GAA AAA AGC 7776  
AAA AAT ACT CAT CCA TTA GTT TCC ACC TCC CTG AAT ATT GAT GAT ATA 7824  
GCG GTA AAG GCT GCT TTT GAT TAT CAT ATG TTC TTA ATC GGC ACT ATA 7872  
AGT AAC ATA CAC TTC CAT CTT CAT AAT GAA AAG GAT GCC AAG GGG GTT 7920  
CTA CCT GAT TTG CTG CAG GTC TCT TTT TCA TCA GAT GAA ATT ATC CTC 7968  
AGC TCT ACT GCA TTA GTT GTA GCA AAT ATA CTG GAT ATC TAC AAC ACC 8016  
ATT GTA CGT ATG AGG CAG GAT AAT AAA ATA TCG TAT ATG GAG ACG TTG 8064  
AGA GAT TCC AAT CCT GGT GAA TCT AGG CAA CCA ATA TTA TAC AAA GAC 8112  
ATT TTA AGA TCG CTG AAA TTA CTC AGA ACT GAT CTC TCG GTG AAT ATC 8160  
TCC TCT TCA AAG GTC CAG ATT TCG CCA ATA TCT TTA TTC GAT GTG GAA 8208  
GTG TTA GTA ATA AGA ATT GAC AAA GTC TCT ATA CGT TCC GAA ACA CAT 8256  
TCG GGG AAA AAA TTA AAG ACA GAT TTG CAA CTA CAA GTT TTA GAT GTT 8304  
TCT GCA GCG CTT TCT ACT TCC AAA GAA GAA TTA GAT GAG GAA GTT GGA 8352  
GCT TCC ATT GCT ATT GAT GAT TAC ATG CAT TAT GCT TCC AAG ATT GTC 8400  
GGT GGT ACT ATC ATT GAT ATT CCA AAA CTT GCT GTT CAT ATG ACA ACT 8448  
TTA CAA GAA GAA AAG ACA AAT AAT TTA GAA TAT CTA TTT GCT TGC TCT 8496  
TTT TCA GAC AAA ATA TCT GTA AGG TGG AAT CTA GGG CCT GTA GAC TTC 8544

ATA AAG GAA ATG TGG ACT ACA CAT GTC AAA GCA CTG GCA GTT CGT CGA 8592  
TCC CAG GTA GCA AAT ATT TCC TTT GGA CAA ACT GAG GAA GAA CTT GAA 8640  
GAA TCA ATT AAA AAG GAA GAA GCC GCT TCA AAG TTT AAT TAT ATT GCA 8688  
CTA GAA GAA CCG CAG ATC GAA GTG CCT CAG ATA AGA GAT CTG GGA GAC 8736  
GCC ACT CCA CCT ATG GAA TGG TTT GGT GTC AAT AGA AAA AAA TTT CCG 8784  
AAA TTC ACT CAC CAA ACC GCA GTT ATC CCC GTC CAA AAG CTT GTT TAT 8832  
CTT GCA GAA AAG CAG TAT GTC AAG ATA CTA GAT GAT ACG CAT 8874

(2) INFORMATION FOR SEQ ID NO: 2 :

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 2958 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: *Saccharomyces cerevisiae*
- (B) STRAIN: X2180-1B

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2

Met Glu Ala Ile Ser Gln Leu Arg Gly Val Pro Leu Thr His Gln Lys  
1 5 10 15  
Asp Phe Ser Trp Val Phe Leu Val Asp Trp Ile Leu Thr Val Val  
20 25 30  
Cys Leu Thr Met Ile Phe Tyr Met Gly Arg Ile Tyr Ala Tyr Leu Val  
35 40 45  
Ser Phe Ile Leu Glu Trp Leu Leu Trp Lys Arg Ala Lys Ile Lys Ile  
50 55 60  
Asn Val Glu Thr Leu Arg Val Ser Leu Leu Gly Gly Arg Ile His Phe  
65 70 75 80  
Lys Asn Leu Ser Val Ile His Lys Asp Tyr Thr Ile Ser Val Leu Glu  
85 90 95  
Gly Ser Leu Thr Trp Lys Tyr Trp Leu Leu Asn Cys Arg Lys Ala Glu  
100 105 110  
Leu Ile Glu Asn Asn Lys Ser Ser Ser Gly Lys Lys Ala Lys Leu Pro  
115 120 125  
Cys Lys Ile Ser Val Glu Cys Glu Gly Leu Glu Ile Phe Ile Tyr Asn

130                    135                    140  
Arg Thr Val Ala Tyr Asp Asn Val Ile Asn Leu Leu Ser Lys Asp Glu  
145                    150                    155                    160  
Arg Asp Lys Phe Glu Lys Tyr Leu Asn Glu His Ser Phe Pro Glu Pro  
165                    170                    175  
Phe Ser Asp Gly Ser Ser Ala Asp Lys Leu Asp Glu Asp Leu Ser Glu  
180                    185                    190  
Ser Ala Tyr Thr Thr Asn Ser Asp Ala Ser Ile Val Asn Asp Arg Asp  
195                    200                    205  
Tyr Gln Glu Thr Asp Ile Gly Lys His Pro Lys Leu Leu Met Phe Leu  
210                    215                    220  
Pro Ile Glu Leu Lys Phe Ser Arg Gly Ser Leu Leu Leu Gly Asn Lys  
225                    230                    235                    240  
Phe Thr Pro Ser Val Met Ile Leu Ser Tyr Glu Ser Gly Lys Ile  
245                    250                    255  
Ile Asp Val Leu Pro Pro Lys Glu Arg Leu Asp Leu Tyr Arg Asn Lys  
260                    265                    270  
Thr Gln Met Glu Phe Lys Asn Phe Glu Ile Ser Ile Lys Gln Asn Ile  
275                    280                    285  
Gly Tyr Asp Asp Ala Ile Gly Leu Lys Phe Lys Ile Asp Arg Gly Lys  
290                    295                    300  
Val Ser Lys Leu Trp Lys Thr Phe Val Arg Val Phe Gln Ile Val Thr  
305                    310                    315                    320  
Lys Pro Val Val Pro Lys Lys Thr Lys Lys Ser Ala Gly Thr Ser Asp  
325                    330                    335  
Asp Asn Phe Tyr His Lys Trp Lys Gly Leu Ser Leu Tyr Lys Ala Ser  
340                    345                    350  
Ala Gly Asp Ala Lys Ala Ser Asp Leu Asp Asp Val Glu Phe Asp Leu  
355                    360                    365  
Thr Asn His Glu Tyr Ala Lys Phe Thr Ser Ile Leu Lys Cys Pro Lys  
370                    375                    380  
Val Thr Ile Ala Tyr Asp Val Asp Val Pro Gly Val Val Pro His Gly

385	390	395	400
Ala His Pro Thr Ile Pro Asp Ile Asp Gly Pro Asp Val Gly Asn Asn			
405	410	415	
Gly Ala Pro Pro Asp Phe Ala Leu Asp Val Gln Ile His Gly Gly Ser			
420	425	430	
Ile Cys Tyr Gly Pro Trp Ala Gln Arg Gln Val Ser His Leu Gln Arg			
435	440	445	
Val Leu Ser Pro Val Val Ser Arg Thr Ala Lys Pro Ile Lys Lys Leu			
450	455	460	
Pro Pro Gly Ser Arg Arg Ile Tyr Thr Leu Phe Arg Met Asn Ile Ser			
465	470	475	480
Ile Met Glu Asp Thr Thr Trp Arg Ile Pro Thr Arg Glu Ser Ser Lys			
485	490	495	
Asp Pro Glu Phe Leu Lys His Tyr Lys Glu Thr Asn Glu Glu Tyr Arg			
500	505	510	
Pro Phe Gly Trp Met Asp Leu Arg Phe Cys Lys Asp Thr Tyr Ala Asn			
515	520	525	
Phe Asn Ile Ser Val Cys Pro Thr Val Gln Gly Phe Gln Asn Asn Phe			
530	535	540	
His Val His Phe Leu Glu Thr Glu Ile Arg Ser Ser Val Asn His Asp			
545	550	555	560
Ile Leu Leu Lys Ser Lys Val Phe Asp Ile Asp Gly Asp Ile Gly Tyr			
565	570	575	
Pro Leu Gly Trp Asn Ser Lys Ala Ile Trp Ile Ile Asn Met Lys Ser			
580	585	590	
Glu Gln Leu Glu Ala Phe Leu Leu Arg Glu His Ile Thr Leu Val Ala			
595	600	605	
Asp Thr Leu Ser Asp Phe Ser Ala Gly Asp Pro Thr Pro Tyr Glu Leu			
610	615	620	
Phe Arg Pro Phe Val Tyr Lys Val Asn Trp Glu Met Glu Gly Tyr Ser			
625	630	635	640
Ile Tyr Leu Asn Val Asn Asp His Asn Ile Val Asn Asn Pro Leu Asp			

645	650	655
Phe Asn Glu Asn Cys Tyr Leu Ser Leu His Gly Asp Lys Leu Ser Ile		
660	665	670
Asp Val Thr Val Pro Arg Glu Ser Ile Leu Gly Thr Tyr Thr Asp Met		
675	680	685
Ser Tyr Glu Ile Ser Thr Pro Met Phe Arg Met Met Leu Asn Thr Pro		
690	695	700
Pro Trp Asn Thr Leu Asn Glu Phe Met Lys His Lys Glu Val Gly Arg		
705	710	715
Ala Tyr Asp Phe Thr Ile Lys Gly Ser Tyr Leu Leu Tyr Ser Glu Leu		
725	730	735
Asp Ile Asp Asn Val Asp Thr Leu Val Ile Glu Cys Asn Ser Lys Ser		
740	745	750
Thr Val Leu His Cys Tyr Gly Phe Val Met Arg Tyr Leu Thr Asn Val		
755	760	765
Lys Met Asn Tyr Phe Gly Glu Phe Phe Asn Phe Val Thr Ser Glu Glu		
770	775	780
Tyr Thr Gly Val Leu Gly Ala Arg Glu Val Gly Asp Val Thr Thr Lys		
785	790	795
Ser Ser Val Ala Asp Leu Ala Ser Thr Val Asp Ser Gly Tyr Gln Asn		
805	810	815
Ser Ser Leu Lys Asn Glu Ser Glu Asp Lys Gly Pro Met Lys Arg Ser		
820	825	830
Asp Leu Lys Arg Thr Thr Asn Glu Thr Asp Ile Trp Phe Thr Phe Ser		
835	840	845
Val Trp Asp Gly Ala Leu Ile Leu Pro Glu Thr Ile Tyr Ser Phe Asp		
850	855	860
Pro Cys Ile Ala Leu His Phe Ala Glu Leu Val Val Asp Phe Arg Ser		
865	870	875
Cys Asn Tyr Tyr Met Asp Ile Met Ala Val Leu Asn Gly Thr Ser Ile		
885	890	895
Lys Arg His Val Ser Lys Gln Ile Asn Glu Val Phe Asp Phe Ile Arg		

900                    905                    910  
Arg Asn Asn Gly Ala Asp Glu Gln Glu His Gly Leu Leu Ser Asp Leu  
915                    920                    925  
Thr Ile His Gly His Arg Met Tyr Gly Leu Pro Pro Thr Glu Pro Thr  
930                    935                    940  
Tyr Phe Cys Gln Trp Asp Ile Asn Leu Gly Asp Leu Cys Ile Asp Ser  
945                    950                    955                    960  
Asp Ile Glu Phe Ile Lys Gly Phe Phe Asn Ser Phe Tyr Lys Ile Gly  
965                    970                    975  
Phe Gly Tyr Asn Asp Leu Glu Asn Ile Leu Leu Tyr Asp Thr Glu Thr  
980                    985                    990  
Ile Asn Asp Met Thr Ser Leu Thr Val His Val Glu Lys Ile Arg Ile  
995                    1000                    1005  
Gly Leu Lys Asp Pro Val Met Lys Ser Gln Ser Val Ile Ser Ala Glu  
1010                    1015                    1020  
Ser Ile Leu Phe Thr Leu Ile Asp Phe Glu Asn Glu Lys Tyr Ser Gln  
1025                    1030                    1035                    1040  
Arg Ile Asp Val Lys Ile Pro Lys Leu Thr Ile Ser Leu Asn Cys Val  
1045                    1050                    1055  
Met Gly Asp Gly Val Asp Thr Ser Phe Leu Lys Phe Glu Thr Lys Leu  
1060                    1065                    1070  
Arg Phe Thr Asn Phe Glu Gln Tyr Lys Asp Ile Asp Lys Lys Arg Ser  
1075                    1080                    1085  
Glu Gln Arg Arg Tyr Ile Thr Ile His Asp Ser Pro Tyr His Arg Cys  
1090                    1095                    1100  
Pro Phe Leu Leu Pro Leu Phe Tyr Gln Asp Ser Asp Thr Tyr Gln Asn  
1105                    1110                    1115                    1120  
Leu Tyr Gly Ala Ile Ala Pro Ser Ser Ser Ile Pro Thr Leu Pro Leu  
1125                    1130                    1135  
Pro Thr Leu Pro Asp Thr Ile Asp Tyr Ile Ile Glu Asp Ile Val Gly  
1140                    1145                    1150  
Glu Tyr Ala Thr Leu Leu Glu Thr Thr Asn Pro Phe Lys Asn Ile Phe

1155	1160	1165
Ala Glu Thr Pro Ser Thr Met Glu Pro Ser Arg Ala Ser Phe Ser Glu		
1170	1175	1180
Asp Asp Asn Asp Glu Glu Ala Asp Pro Ser Ser Phe Lys Pro Val Ala		
1185	1190	1195
Phe Thr Glu Asp Arg Asn His Glu Arg Asp Asn Tyr Val Val Asp Val		
1205	1210	1215
Ser Tyr Ile Leu Leu Asp Val Asp Pro Leu Leu Phe Ile Phe Ala Lys		
1220	1225	1230
Ser Leu Leu Glu Gln Leu Tyr Ser Glu Asn Met Val Gln Val Leu Asp		
1235	1240	1245
Asp Ile Glu Ile Gly Ile Val Lys Arg Leu Ser Asn Leu Gln Glu Gly		
1250	1255	1260
Ile Thr Ser Ile Ser Asn Ile Asp Ile His Ile Ala Tyr Leu Asn Leu		
1265	1270	1275
Ile Trp Gln Glu Thr Gly Glu Glu Gly Phe Glu Leu Tyr Leu Asp Arg		
1285	1290	1295
Ile Asp Tyr Gln Met Ser Glu Lys Ser Leu Glu Lys Asn Arg Thr Asn		
1300	1305	1310
Lys Leu Leu Glu Val Ala Ala Leu Ala Lys Val Lys Thr Val Arg Val		
1315	1320	1325
Thr Val Asn Gln Lys Lys Asn Pro Asp Leu Ser Glu Asp Arg Pro Pro		
1330	1335	1340
Ala Leu Ser Leu Gly Ile Glu Gly Phe Glu Val Trp Ser Ser Thr Glu		
1345	1350	1355
Asp Arg Gln Val Asn Ser Leu Asn Leu Thr Ser Ser Asp Ile Thr Ile		
1365	1370	1375
Asp Glu Ser Gln Met Glu Trp Leu Phe Glu Tyr Cys Ser Asp Gln Gly		
1380	1385	1390
Asn Leu Ile Gln Glu Val Cys Thr Ser Phe Asn Ser Ile Gln Asn Thr		
1395	1400	1405
Arg Ser Asn Ser Lys Thr Glu Leu Ile Ser Lys Leu Thr Ala Ala Ser		

1410                    1415                    1420  
Glu Tyr Tyr Gln Ile Ser His Asp Pro Tyr Val Ile Thr Lys Pro Ala  
1425                    1430                    1435                    1440  
Phe Ile Met Arg Leu Ser Lys Gly His Val Arg Glu Asn Arg Ser Trp  
1445                    1450                    1455  
Lys Ile Ile Thr Arg Leu Arg His Ile Leu Thr Tyr Leu Pro Asp Asp  
1460                    1465                    1470  
Trp Gln Ser Asn Ile Asp Glu Val Leu Lys Glu Lys Lys Tyr Thr Ser  
1475                    1480                    1485  
Ala Lys Asp Ala Lys Asn Ile Phe Met Ser Val Phe Ser Thr Trp Arg  
1490                    1495                    1500  
Asn Trp Glu Phe Ser Asp Val Ala Arg Ser Tyr Ile Tyr Gly Lys Leu  
1505                    1510                    1515                    1520  
Phe Thr Ala Glu Asn Glu Lys His Lys Gln Asn Leu Ile Lys Lys Leu  
1525                    1530                    1535  
Leu Lys Cys Thr Met Gly Ser Phe Tyr Leu Thr Val Tyr Gly Glu Gly  
1540                    1545                    1550  
Tyr Glu Val Glu His Asn Phe Val Val Ala Asp Ala Asn Leu Val Val  
1555                    1560                    1565  
Asp Leu Thr Pro Pro Val Thr Ser Leu Pro Ser Asn Arg Glu Glu Thr  
1570                    1575                    1580  
Ile Glu Ile Thr Gly Arg Val Gly Ser Val Lys Gly Lys Phe Ser Asp  
1585                    1590                    1595                    1600  
Arg Leu Leu Lys Leu Gln Asp Leu Ile Pro Leu Ile Ala Ala Val Gly  
1605                    1610                    1615  
Glu Asp Asp Lys Ser Asp Pro Lys Lys Glu Leu Ser Lys Gln Phe Lys  
1620                    1625                    1630  
Met Asn Thr Val Leu Leu Val Asp Lys Ser Glu Leu Gln Leu Val Met  
1635                    1640                    1645  
Asp Gln Thr Lys Leu Met Ser Arg Thr Val Gly Gly Arg Val Ser Leu  
1650                    1655                    1660  
Leu Trp Glu Asn Leu Lys Asp Ser Thr Ser Gln Ala Gly Ser Leu Val

1665                    1670                    1675                    1680  
Ile Phe Ser Gln Lys Ser Glu Val Trp Leu Lys His Thr Ser Val Ile  
1685                    1690                    1695  
Leu Gly Glu Ala Gln Leu Arg Asp Phe Ser Val Leu Ala Thr Thr Glu  
1700                    1705                    1710  
Ala Trp Ser His Lys Pro Thr Ile Leu Ile Asn Asn Gln Cys Ala Asp  
1715                    1720                    1725  
Leu His Phe Arg Ala Met Ser Ser Thr Glu Gln Leu Val Thr Ala Ile  
1730                    1735                    1740  
Thr Glu Ile Arg Glu Ser Leu Met Met Ile Lys Glu Arg Ile Lys Phe  
1745                    1750                    1755                    1760  
Lys Pro Lys Ser Lys Lys Ser Gln Phe Val Asp Gln Lys Ile Asn  
1765                    1770                    1775  
Thr Val Leu Ser Cys Tyr Phe Ser Asn Val Ser Ser Glu Val Met Pro  
1780                    1785                    1790  
Leu Ser Pro Phe Tyr Ile Arg His Glu Ala Lys Gln Leu Asp Ile Tyr  
1795                    1800                    1805  
Phe Asn Lys Phe Gly Ser Asn Glu Ile Leu Leu Ser Ile Trp Asp Thr  
1810                    1815                    1820  
Asp Phe Phe Met Thr Ser His Gln Thr Lys Glu Gln Tyr Leu Arg Phe  
1825                    1830                    1835                    1840  
Ser Phe Gly Asp Ile Glu Ile Lys Gly Gly Ile Ser Arg Glu Gly Tyr  
1845                    1850                    1855  
Ser Leu Ile Asn Val Asp Ile Ser Ile Ser Met Ile Lys Leu Thr Phe  
1860                    1865                    1870  
Ser Glu Pro Arg Arg Ile Val Asn Ser Phe Leu Gln Asp Glu Lys Leu  
1875                    1880                    1885  
Ala Ser Gln Gly Ile Asn Leu Leu Tyr Ser Leu Lys Pro Leu Phe Phe  
1890                    1895                    1900  
Ser Ser Asn Leu Pro Lys Lys Glu Lys Gln Ala Pro Ser Ile Met Ile  
1905                    1910                    1915                    1920  
Asn Trp Thr Leu Asp Thr Ser Ile Thr Tyr Phe Gly Val Leu Val Pro

1925	1930	1935
Val Ala Ser Thr Tyr Phe Val Phe Glu Leu His Met Leu Leu Ser		
1940	1945	1950
Leu Thr Asn Thr Asn Asn Gly Met Leu Pro Glu Glu Thr Lys Val Thr		
1955	1960	1965
Gly Gln Phe Ser Ile Glu Asn Ile Leu Phe Leu Ile Lys Glu Arg Ser		
1970	1975	1980
Leu Pro Ile Gly Leu Ser Lys Leu Leu Asp Phe Ser Ile Lys Val Ser		
1985	1990	1995
Thr Leu Gln Arg Thr Val Asp Thr Glu Gln Ser Phe Gln Val Glu Ser		
2005	2010	2015
Ser His Phe Arg Val Cys Leu Ser Pro Asp Ser Leu Leu Arg Leu Met		
2020	2025	2030
Trp Gly Ala His Lys Leu Leu Asp Leu Ser His Tyr Tyr Ser Arg Arg		
2035	2040	2045
His Ala Pro Asn Ile Trp Asn Thr Lys Met Phe Thr Gly Lys Ser Asp		
2050	2055	2060
Lys Ser Lys Glu Met Pro Ile Asn Phe Arg Ser Ile His Ile Leu Ser		
2065	2070	2075
Tyr Lys Phe Cys Ile Gly Trp Ile Phe Gln Tyr Gly Ala Gly Ser Asn		
2085	2090	2095
Pro Gly Leu Met Leu Gly Tyr Asn Arg Leu Phe Ser Ala Tyr Glu Lys		
2100	2105	2110
Asp Phe Gly Lys Phe Thr Val Val Asp Ala Phe Phe Ser Val Ala Asn		
2115	2120	2125
Gly Asn Thr Ser Ser Thr Phe Phe Ser Glu Gly Asn Glu Lys Asp Lys		
2130	2135	2140
Tyr Asn Arg Ser Phe Leu Pro Asn Met Gln Ile Ser Tyr Trp Phe Lys		
2145	2150	2155
Arg Cys Gly Glu Leu Lys Asp Trp Phe Phe Arg Phe His Gly Glu Ala		
2165	2170	2175
Leu Asp Val Asn Phe Val Pro Ser Phe Met Asp Val Ile Glu Ser Thr		

2180                    2185                    2190  
Leu Gln Ser Met Arg Ala Phe Gln Glu Leu Lys Lys Asn Ile Leu Asp  
2195                    2200                    2205  
Val Ser Glu Ser Leu Arg Ala Glu Asn Asp Asn Ser Tyr Ala Ser Thr  
2210                    2215                    2220  
Ser Val Glu Ser Ala Ser Ser Leu Ala Pro Phe Leu Asp Asn Ile  
2225                    2230                    2235                    2240  
Arg Ser Val Asn Ser Asn Phe Lys Tyr Asp Gly Gly Val Phe Arg Val  
2245                    2250                    2255  
Tyr Thr Tyr Glu Asp Ile Glu Thr Lys Ser Glu Pro Ser Phe Glu Ile  
2260                    2265                    2270  
Lys Ser Pro Val Val Thr Ile Asn Cys Thr Tyr Lys His Asp Glu Asp  
2275                    2280                    2285  
Lys Val Lys Pro His Lys Phe Arg Thr Leu Ile Thr Val Asp Pro Thr  
2290                    2295                    2300  
His Asn Thr Leu Tyr Ala Gly Cys Ala Pro Leu Leu Met Glu Phe Ser  
2305                    2310                    2315                    2320  
Glu Ser Leu Gln Lys Met Ile Lys Lys His Ser Thr Asp Glu Lys Pro  
2325                    2330                    2335  
Asn Phe Thr Lys Pro Ser Ser Gln Asn Val Asp Tyr Lys Arg Leu Leu  
2340                    2345                    2350  
Asp Gln Phe Asp Val Ala Val Lys Leu Thr Ser Ala Lys Gln Gln Leu  
2355                    2360                    2365  
Ser Leu Ser Cys Glu Pro Lys Ala Lys Val Gln Ala Asp Val Gly Phe  
2370                    2375                    2380  
Glu Ser Phe Leu Phe Ser Met Ala Thr Asn Glu Phe Asp Ser Glu Gln  
2385                    2390                    2395                    2400  
Pro Leu Glu Phe Ser Leu Thr Leu Glu His Thr Lys Ala Ser Ile Lys  
2405                    2410                    2415  
His Ile Phe Ser Arg Glu Val Ser Thr Ser Phe Glu Val Gly Phe Met  
2420                    2425                    2430  
Asp Leu Thr Leu Leu Phe Thr His Pro Asp Val Ile Ser Met Tyr Gly

2435                    2440                    2445  
Thr Gly Leu Val Ser Asp Leu Ser Val Phe Phe Asn Val Lys Gln Leu  
2450                    2455                    2460  
Gln Asn Leu Tyr Leu Phe Leu Asp Ile Trp Arg Phe Ser Ser Ile Leu  
2465                    2470                    2475                    2480  
His Thr Arg Pro Val Gln Arg Thr Val Asn Lys Glu Ile Glu Met Ser  
2485                    2490                    2495  
Ser Leu Thr Ser Thr Asn Tyr Ala Asp Ala Gly Thr Glu Ile Pro Trp  
2500                    2505                    2510  
Cys Phe Thr Leu Ile Phe Thr Asn Val Ser Gly Asp Val Asp Leu Gly  
2515                    2520                    2525  
Pro Ser Leu Gly Met Ile Ser Leu Arg Thr Gln Arg Thr Trp Leu Ala  
2530                    2535                    2540  
Thr Asp His Tyr Asn Glu Lys Arg Gln Leu Leu His Ala Phe Thr Asp  
2545                    2550                    2555                    2560  
Gly Ile Ser Leu Thr Ser Glu Gly Arg Leu Ser Gly Leu Phe Glu Val  
2565                    2570                    2575  
Ala Asn Ala Ser Trp Leu Ser Glu Val Lys Trp Pro Pro Glu Lys Ser  
2580                    2585                    2590  
Lys Asn Thr His Pro Leu Val Ser Thr Ser Leu Asn Ile Asp Asp Ile  
2595                    2600                    2605  
Ala Val Lys Ala Ala Phe Asp Tyr His Met Phe Leu Ile Gly Thr Ile  
2610                    2615                    2620  
Ser Asn Ile His Phe His Leu His Asn Glu Lys Asp Ala Lys Gly Val  
2625                    2630                    2635                    2640  
Leu Pro Asp Leu Leu Gln Val Ser Phe Ser Ser Asp Glu Ile Ile Leu  
2645                    2650                    2655  
Ser Ser Thr Ala Leu Val Val Ala Asn Ile Leu Asp Ile Tyr Asn Thr  
2660                    2665                    2670  
Ile Val Arg Met Arg Gln Asp Asn Lys Ile Ser Tyr Met Glu Thr Leu  
2675                    2680                    2685  
Arg Asp Ser Asn Pro Gly Glu Ser Arg Gln Pro Ile Leu Tyr Lys Asp

2690	2695	2700
Ile Leu Arg Ser Leu Lys Leu Leu Arg Thr Asp Leu Ser Val Asn Ile		
2705	2710	2715
Ser Ser Ser Lys Val Gln Ile Ser Pro Ile Ser Leu Phe Asp Val Glu		2720
2725	2730	2735
val Leu Val Ile Arg Ile Asp Lys Val Ser Ile Arg Ser Glu Thr His		
2740	2745	2750
Ser Gly Lys Lys Leu Lys Thr Asp Leu Gln Leu Gln Val Leu Asp Val		
2755	2760	2765
Ser Ala Ala Leu Ser Thr Ser Lys Glu Glu Leu Asp Glu Glu Val Gly		
2770	2775	2780
Ala Ser Ile Ala Ile Asp Asp Tyr Met His Tyr Ala Ser Lys Ile val		
2785	2790	2795
Gly Gly Thr Ile Ile Asp Ile Pro Lys Leu Ala Val His Met Thr Thr		2800
2805	2810	2815
Leu Gln Glu Glu Lys Thr Asn Asn Leu Glu Tyr Leu Phe Ala Cys Ser		
2820	2825	2830
Phe Ser Asp Lys Ile Ser Val Arg Trp Asn Leu Gly Pro Val Asp Phe		
2835	2840	2845
Ile Lys Glu Met Trp Thr His Val Lys Ala Leu Ala Val Arg Arg		
2850	2855	2860
Ser Gln Val Ala Asn Ile Ser Phe Gly Gln Thr Glu Glu Glu Leu Glu		
2865	2870	2875
Glu Ser Ile Lys Lys Glu Glu Ala Ala Ser Lys Phe Asn Tyr Ile Ala		2880
2885	2890	2895
Leu Glu Glu Pro Gln Ile Glu Val Pro Gln Ile Arg Asp Leu Gly Asp		
2900	2905	2910
Ala Thr Pro Pro Met Glu Trp Phe Gly Val Asn Arg Lys Lys Phe Pro		
2915	2920	2925
Lys Phe Thr His Gln Thr Ala Val Ile Pro Val Gln Lys Leu Val Tyr		
2930	2935	2940
Leu Ala Glu Lys Gln Tyr Val Lys Ile Leu Asp Asp Thr His		

2945

2950

2955